

REMARKS

Applicant wishes to thank the Examiner for the attention accorded to the instant application, and respectfully requests reconsideration of the application as amended.

Formal Matters

In this amendment, claims 2, 5, 7, 10, 12, 15, 17, and 20 are pending, and claims 1, 3-4, 6, 8-9, 11, 13-14, 16, and 18-19 are canceled. Claims 2, 5, 12, and 15 are amended to be independent claims and to more clearly recite the invention. In particular, claims 2 and 5 are amended to incorporate claim 1, and claims 12 and 15 are amended to incorporate claim 11. Additional support for these amendments can be found, for example, in the clean specification filed on April 24, 2007 on page 29, lines 6-10, and in Figure 7.

Specification

The Examiner objects to the specification and requires that “Laid-Open” be replaced with “Publication”. Accordingly, applicant amends the paragraph beginning on page 2, line 9 of the clean specification filed April 24, 2007 to replace “Laid-open” with “Publication”. Withdrawal of this objection is respectfully requested.

Rejection of Claims Under 35 U.S.C. §103

The Examiner has rejected claims 1-20 under 35 U.S.C. §103(a) as unpatentable over Schumann et al., U.S. Patent No. 5,889,714 (hereinafter “Schumann”). This rejection should be withdrawn based on the comments and remarks herein.

Schumann discloses a precharge policy logic 245 including an active row register 242, a row address comparator 244, a history register 246, a multiplexor 247, and a policy data register 248 (column 5, lines 15-18). The history register 246 corresponds to

a result holding shift register 42 shown in Figure 7 of the present application. The multiplexor 247 and the policy data register 248 correspond to a judging section 45 shown in Figure 7 of the present application.

Schumann discloses that the four bits of the history register 246 are used as an index to control a multiplexor 247 that selects one of the sixteen bits of the policy data register 248 (Figure 2) to determine the state of the logic signal PREN (column 7, lines 41-44). The history register 246 in effect predicts whether the next access will be a hit or a miss, based on the prediction pattern defined by the policy data register 248 (column 7, lines 44-47, emphasis added). If the history register 246 is made of n (a natural number) bits, the policy data register 248 is made of 2^n bits, that is, 2^n pieces of memory transistors, enabling the definition of the prediction pattern.

Hence, as the number of bits in the history register 246 increases, the hardware, such as memory transistors, making up the policy data register 248 increases exponentially. Hence, it is quite difficult to put Schumann's invention into practice.

The present invention overcomes this difficulty by adding the bits in the holding circuit or result holding shift register, instead of using these bits as an index to a prediction pattern. This can be accomplished using the judging section 45 made up of, for example, an adder. Accordingly, increasing the number of bits of the result holding shift register 42 only linearly increases the hardware in the judging section 45.

In particular, the independent claims of present invention recite that, for each of a last " n " (" n " is a natural number) times of accesses to each bank in memory, said hit predicting unit stores whether the hit or the miss has been found, and said hit predicting unit predicts the hit, if, out of the last " n " times of accesses, a number of times of

accesses in which the hit has been found is “m” or more ($m \leq n$: “m” is a natural number) “m” being a result of adding said number of times of accesses in which the hit has been found, and said hit predicting unit predicts the miss, if said number of times of accesses is not “m” or more.

It has been held by the courts that to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. See, *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). As illustrated above, Schumann does not disclose or suggest a number of times of accesses in which the hit has been found is “m” or more ($m \leq n$: “m” is a natural number) “m” being a result of adding said number of times of accesses in which the hit has been found, and does not disclose or suggest each and every feature of the present invention as recited in independent claims 2, 5, 12 and 15, so that *prima facie* obviousness has not been established. Thus, these independent claims are patentably distinguishable over the art of record in the application. Claims 7, 10, 17 and 20 depend from claims 2, 5, 12 and 15, respectively, each of these dependent claims incorporating all of the features and limitations of its base claim. Thus, these dependent claims are patentably distinguishable over the art of record in the application for at least the reasons that their base claims are patentably distinguishable over the art of record in the application. Hence, this rejection should be withdrawn.

Conclusion

For at least the reasons set forth in the foregoing discussion, Applicant believes that the Application is now allowable, and respectfully requests that the Examiner reconsider the rejection and allow the Application. Should the Examiner have any

questions regarding this Amendment, or regarding the Application generally, the Examiner is invited to telephone the undersigned attorney.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read 'Katherine R. Vieyra', written in dark ink.

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